

p:tac

AAATGAGCTG TTGACAATTA ATCATCGGCT CGTATAATGT GTGGAATTGT GAGCGGATAA
EcoRI SacI KpnISmaI
CAATTTCACA CAGGAAACAG AATTCGAGCT CGGTACCCGG GCTACATGGA GATTAACCTA
RBS | -> α -globin
ATCTAGAGGG TATTAATAAT GTATCGCTTA AATAAGGAGG AATAACATAT GGTGCTGTCT
CCTGCCGACA AGACCAACGT CAAGGCCGCC TGGGGTAAGG TCGGCGCGCA CGCTGGCGAG
TATGGTGCAGG AGGCCCTGGA GAGGATGTT CTGTCCTTCC CCACCACCAA GACCTACTTC
CCGCACCTCG ATCTGAGCCA CGGCTCTGCC CAGGTAAAGG GCCACGGCAA GAAGGTGGCC
GACCGCCTGA CCAACGCCGT GGCGCACGTG GACGACATGC CCAACCGCCT GTCCGCCCTG
AGCGACCTGC ACGCGCACAA GCTTCGGGTG GACCCGGTCA ACTTCAAGCT CCTAAGCCAC
TGCCTGCTGG TGACCCCTGGC CGCCCACCTC CCCGCCGAGT TCACCCCTGC GGTGCACGCC
-> |
TCCCTGGACA AGTTCCCTGGC TTCTGTGAGC ACCGTGCTGA CCTCCAAATA CCGTTAAACT
RBS | -> β -globin
AGAGGGTATT AATAATGTAT CGCTTAAATA AGGAGGAATA ACATATGGTG CACCTGACTC
CTGAGGAGAA GTCTGCCGTT ACTGCCCTGT GGGGCAAGGT GAACGTGGAT GAAGTTGGTG
GTGAGGCCCT GGGCAGGCTG CTGGTGGTCT ACCCTTGGAC CCAGAGGTTC TTTGAGTCCT
TTGGGATCT GTCCACTCCT GATGCTGTTA TGGGCAACCC TAAGGTGAAG GCTCATGGCA
AGAAAAGTGC CGGTGCCCTT AGTGATGGCC TGGCTCACCT GGACAACCTC AAGGGCACCT
TTGCCACACT GAGTGAGCTG CACTGTGACA AGCTGCACGT GGATCCTGAG AACTTCAGGC
 β 108Asn->Gln
TCCTGGGACA AGTACTGGTC TGTGTGCTGG CCCATCACTT TGGCAAAGAA TTCACCCAC
CAGTGCAGGC TGCCTATCAG AAAGTGGTGG CTGGTGTGGC TAATGCCCTG GCCCACAAGT
-> | SphI rrB(5S, T1, T2)
ATCACTAAGC ATGCATCTGT TTTGGCGGAT GAGAGAAGAT TTTCAGCCTG ATACAGATTA
NsiI
.....

FIG. 1A

p:tac

AAATGAGCTG TTGACAATTA ATCATCGGCT CGTATAATGT GTGGAATTGT GAGCGATAA
EcoRI SacI KpnISmaI
CAATTCACA CAGGAAACAG AATTGAGCT CGGTACCCGG GCTACATGGA GATTAACATCA
RBS | -> α -globin
ATCTAGAGGG TATTAATAAT GTATCGCTTA AATAAGGAGG AATAACATAT GGTGCTGTCT
CCTGCCGACA AGACCAACGT CAAGGCCGCC TGGGTAAGG TCGGCGCGCA CGCTGGCGAG
TATGGTGCAGG AGGCCCTGGA GAGGATGTTA CTGTCCTTCC CCACCACCAA GACCTACTTC
CCGCACCTCG ATCTGAGCCA CGGCTCTGCC CAGGTTAAGG GCCACGGCAA GAAGGTGGCC
GACGCGCTGA CCAACGCCGT GGCGCACGTG GACGACATGC CCAACGCGCT GTCCGCCCTG
AGCGACCTGC ACGCGACAA GCTTCGGGTG GACCCGGTCA ACTTCAAGCT CCTAAGCCAC
TGCCTGCTGG TGACCCCTGGC CGCCCACCTC CCCGCCAGT TCACCCCTGC GGTGCACGCC
TCCCTGGACA AGTTCCCTGGC TTCTGTGAGC ACCGTGCTGA CCTCCAAATA CCGTTAAACT
RBS | -> β -globin
AGAGGGTATT AATAATGTAT CGCTTAAATA AGGAGGAATA ACATATGGTG CACCTGACTC
CTGAGGAGAA GTCTGCCGTT ACTGCCCTGT GGGGCAAGGT GAACGTGGAT GAAGTTGGTG
GTGAGGCCCT GGGCAGGCTG CTGGTGGTCT ACCCTTGGAC CCAGAGGTTC TTTGAGTCCT
TTGGGGATCT GTCCACTCCT GATGCTGTTA TGGGCAACCC TAAGGTGAAG GCTCATGGCA
AGAAAGTGCT CGGTGCCTT AGTGATGGCC TGGCTCACCT GGACAAACCTC AAGGGCACCT
TTGCCACACT GAGTGAGCTG CACTGTGACA AGCTGCACGT GGATCCTGAG AACTCAGGT
 β 105Leu->Trp
GGCTAGGCAA CGTGCTGGTC TGTGTGCTGG CCCATCACTT TGGCAAAGAA TTCACCCAC
CAGTGCAGGC TGCCTATCAG AAAAGTGGTGG CTGGTGTGGC TAATGCCCTG GCCCACAAGT
->| SphI rrB(5S, T1, T2)
ATCACTAAGC ATGCATCTGT TTGGCGGAT GAGAGAAGAT TTTCAGCCTG ATACAGATTA
NsiI

FIG. 1B

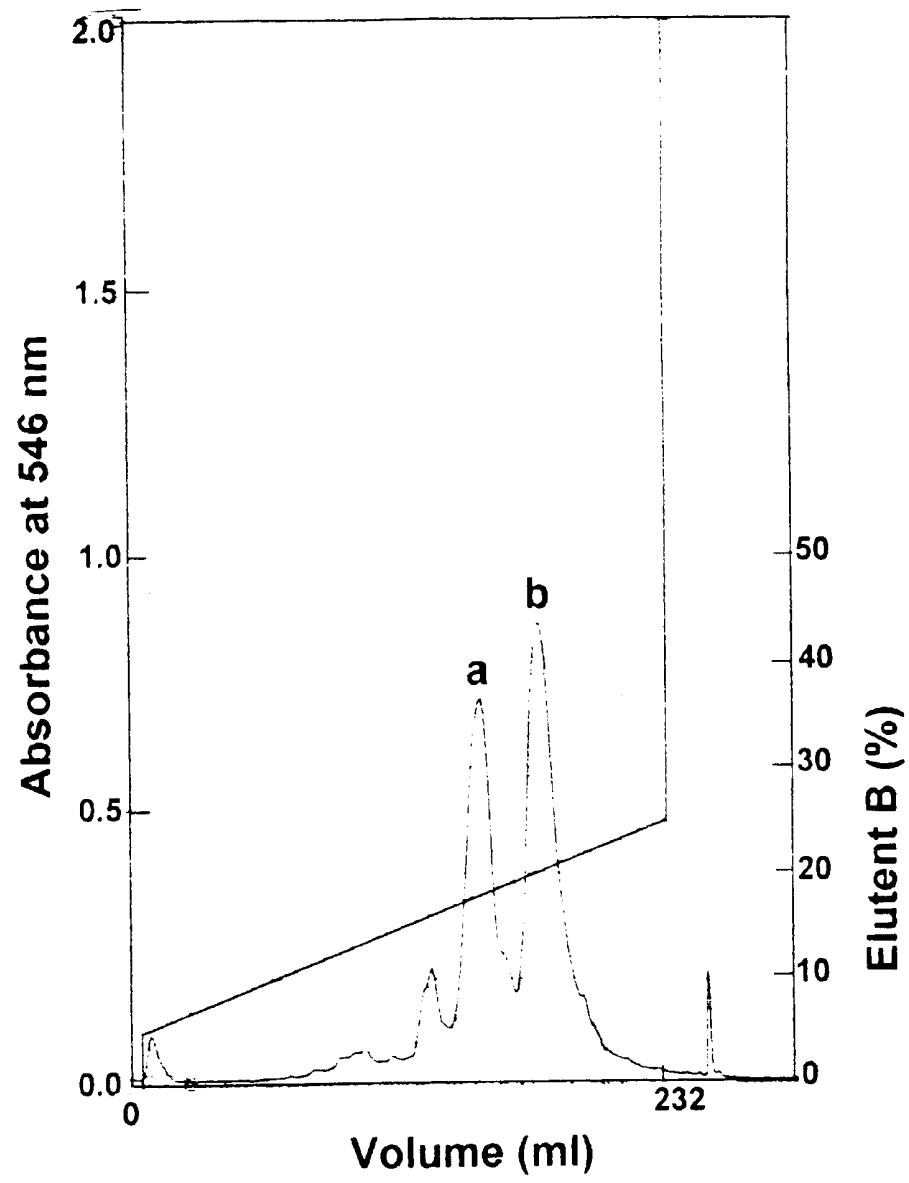


FIG. 2A

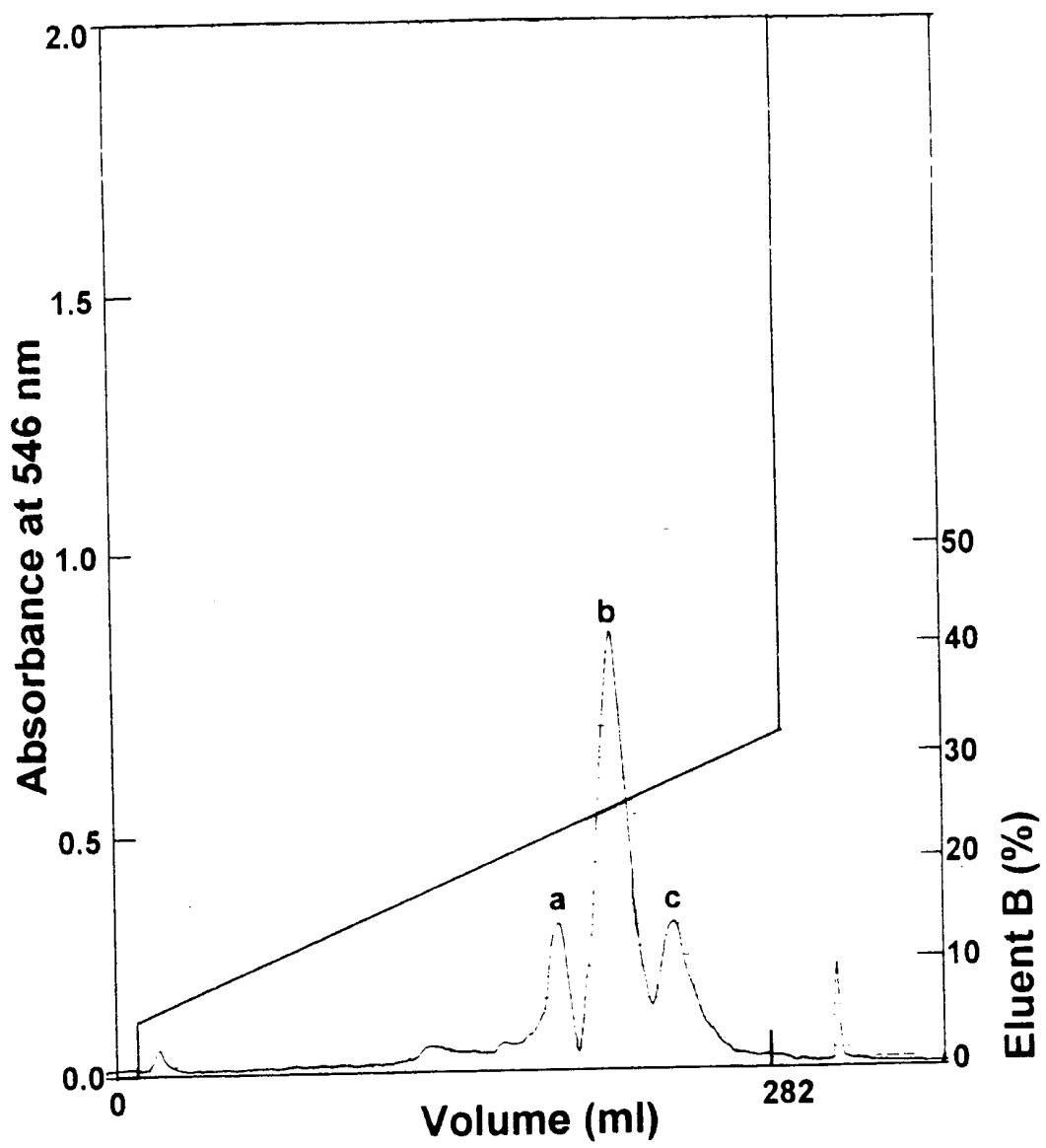


FIG. 2B

FIG. 3A

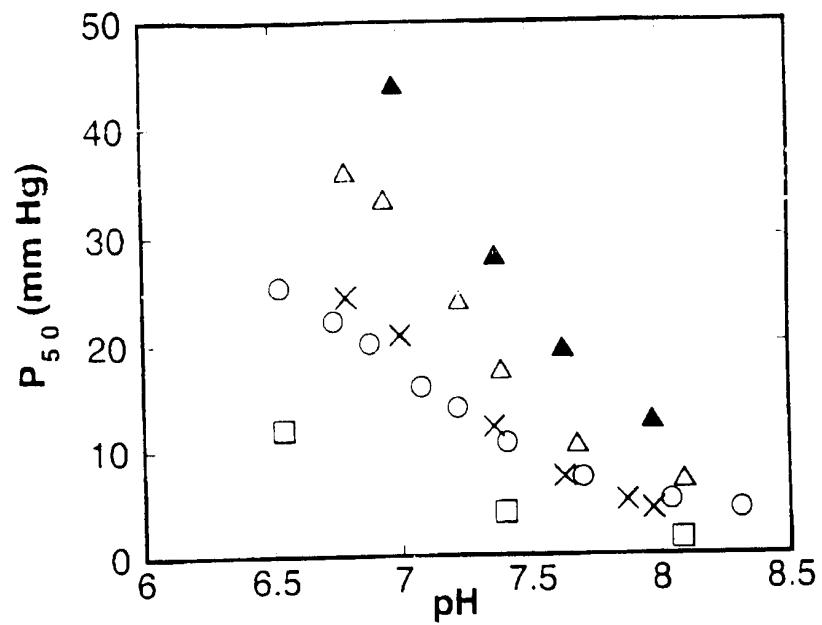
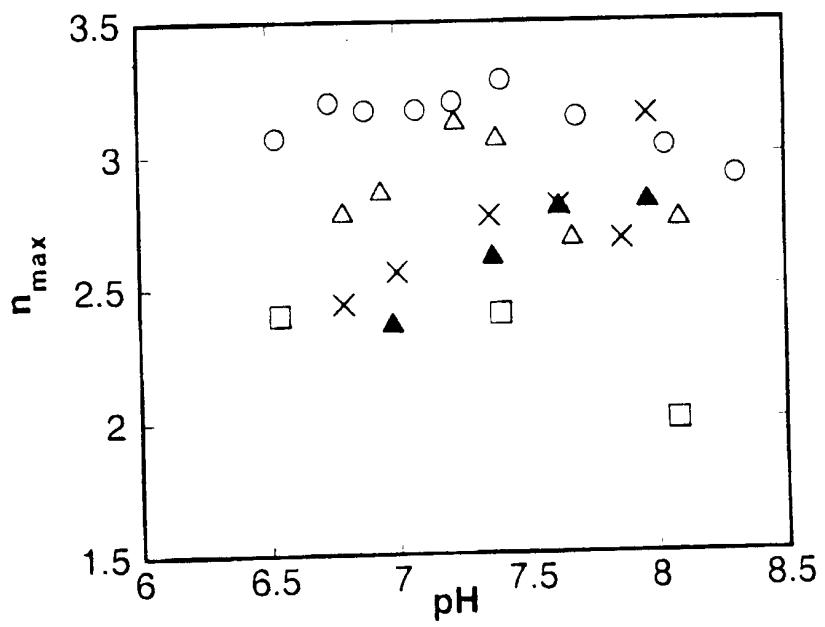


FIG. 3B



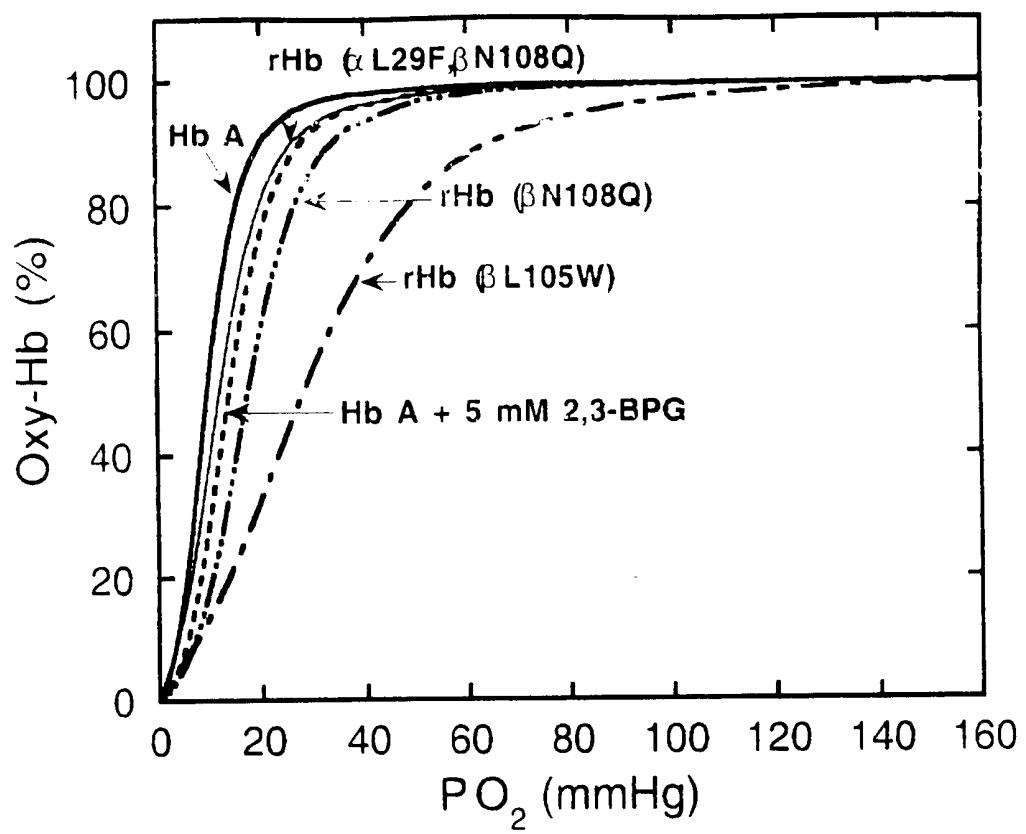


FIG. 4

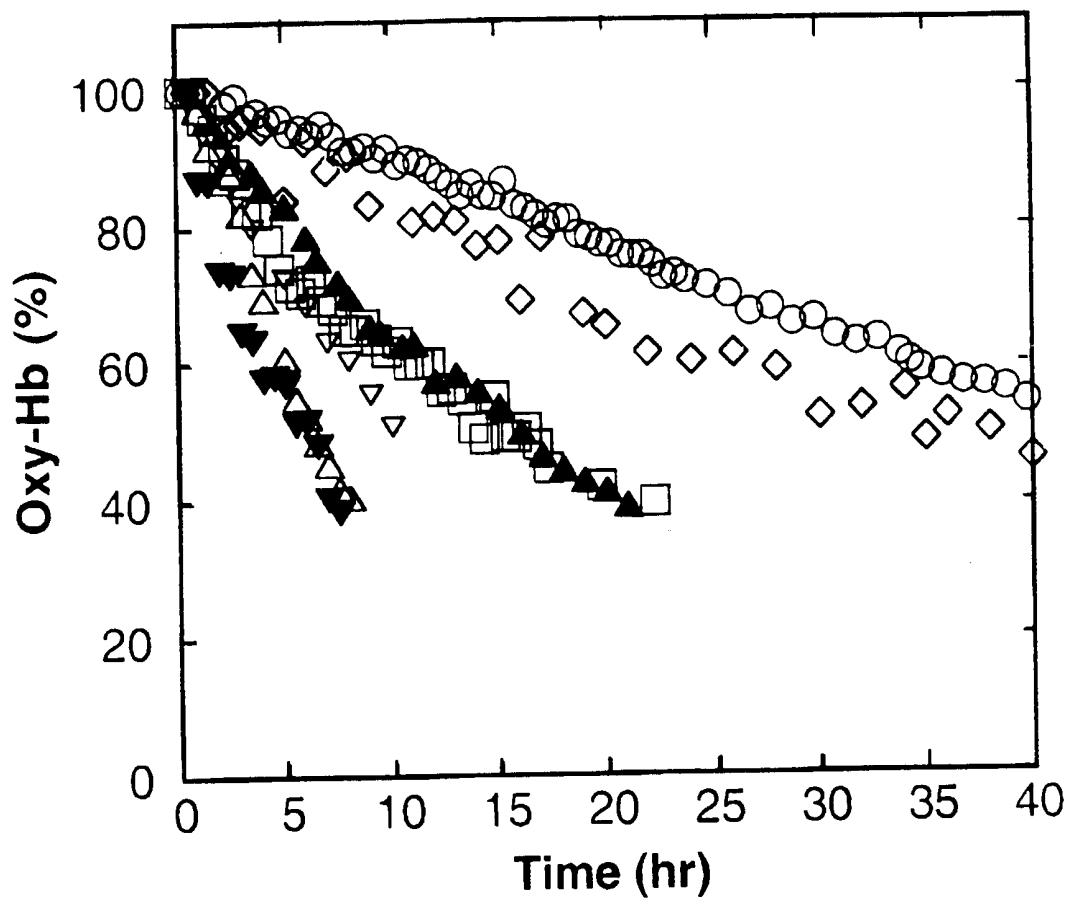


FIG. 5

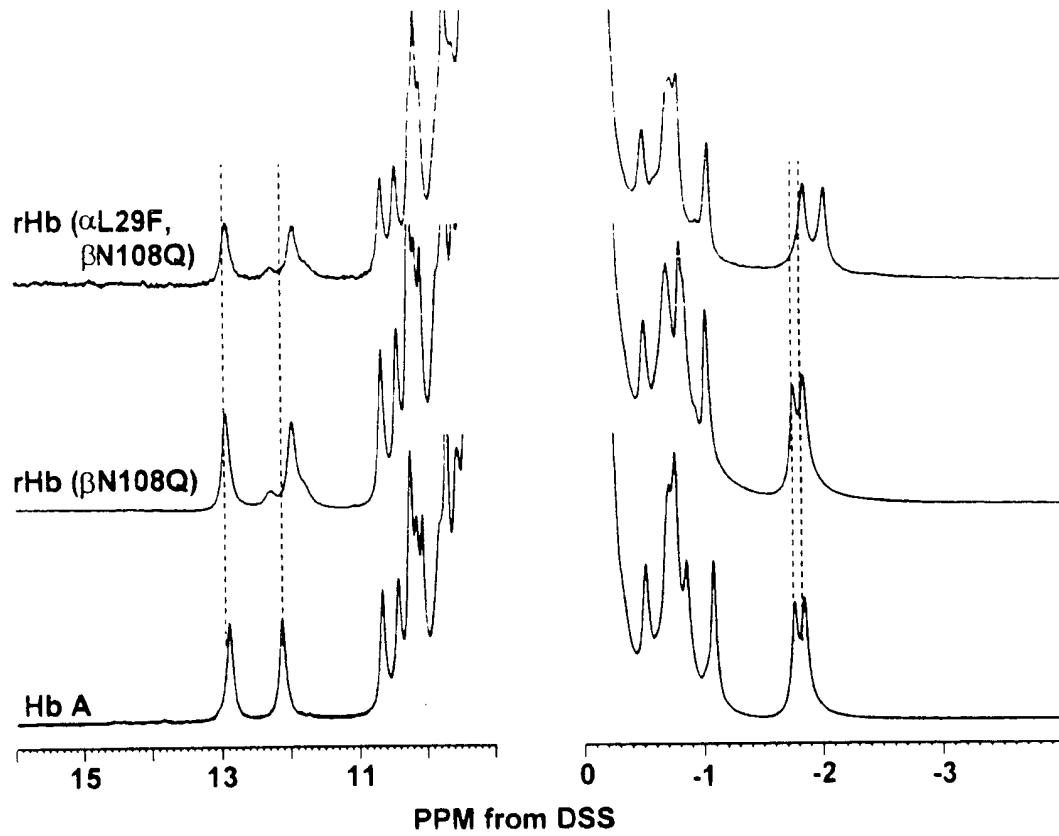
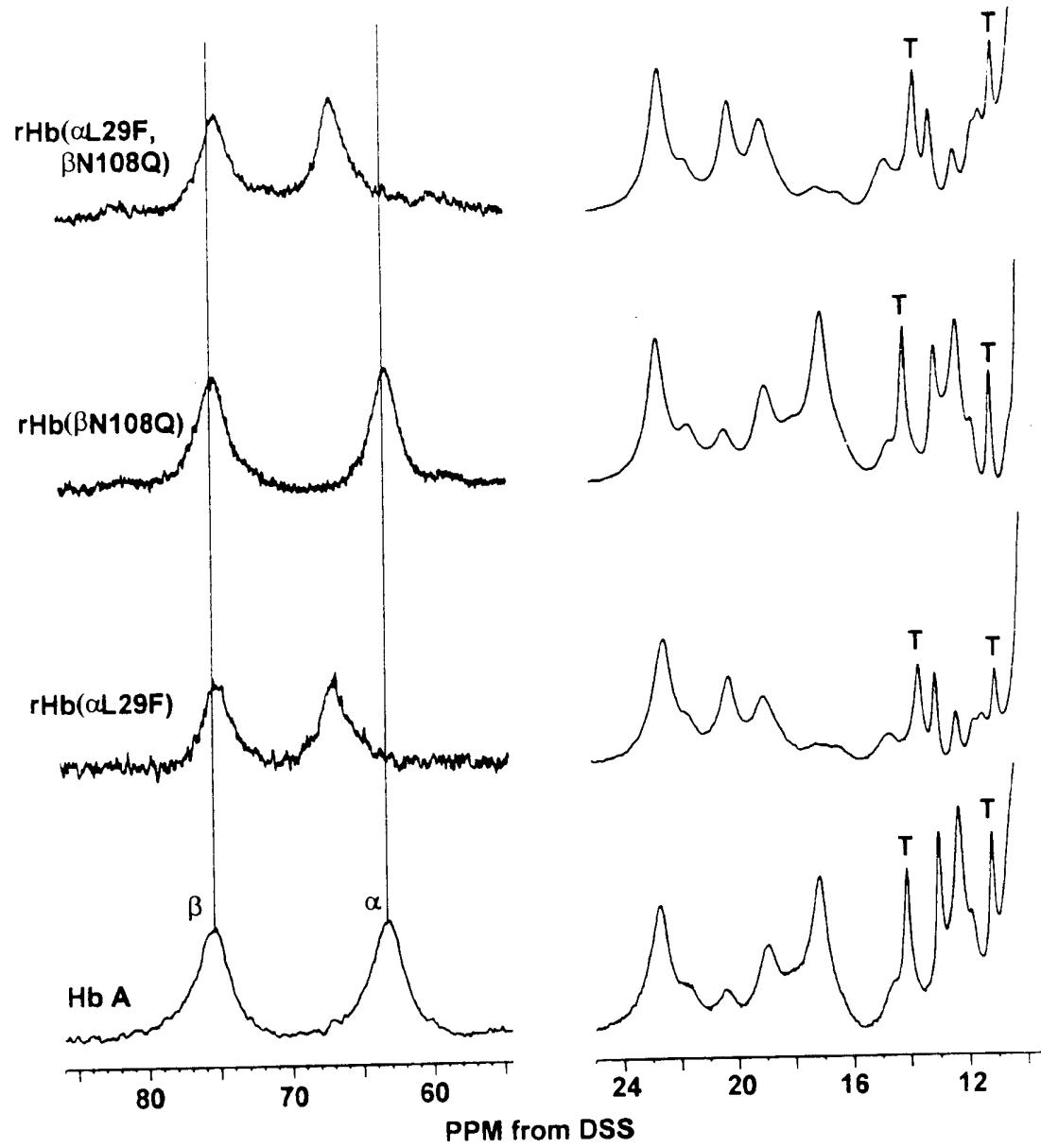


FIG. 6A

FIG. 6B



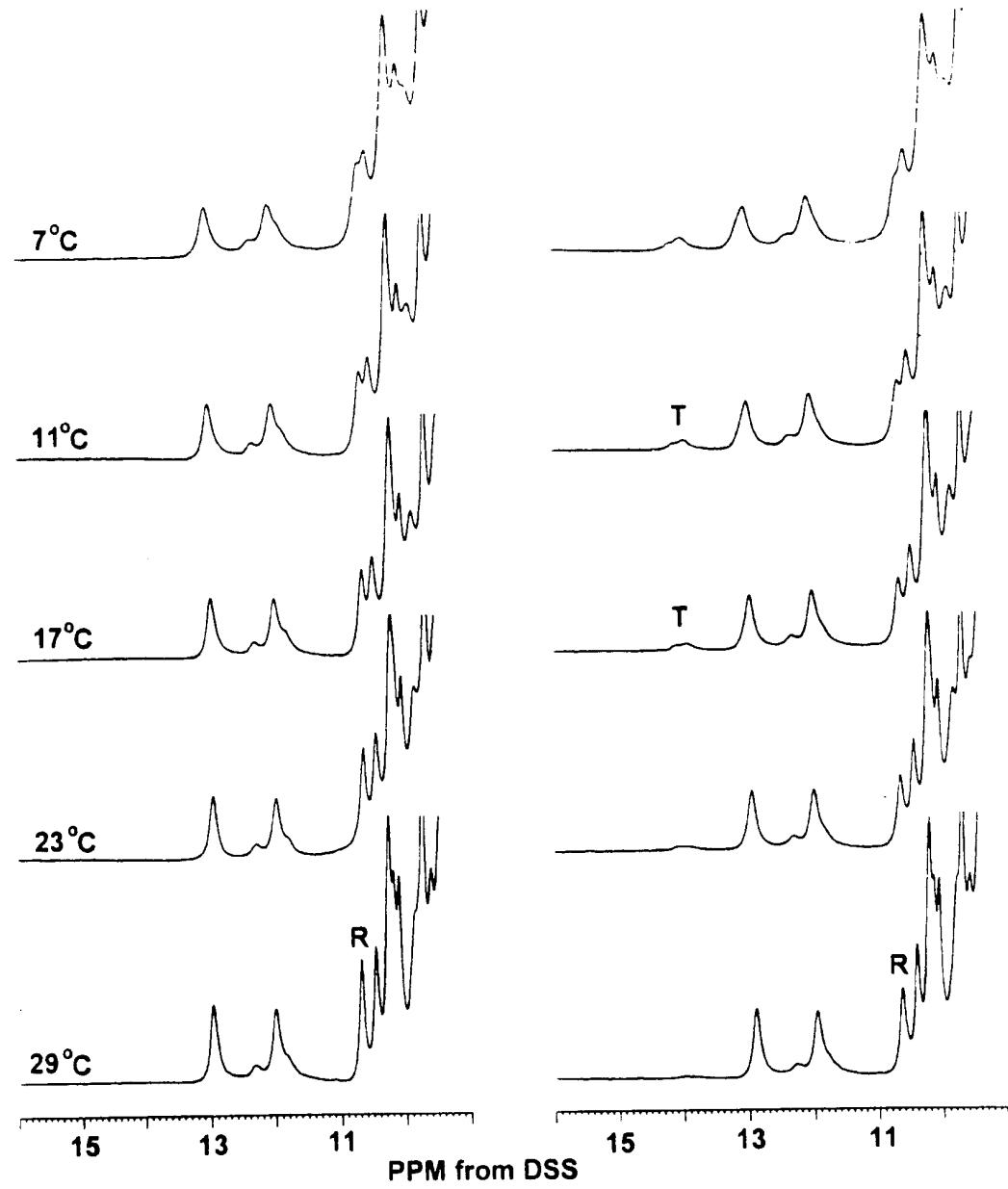
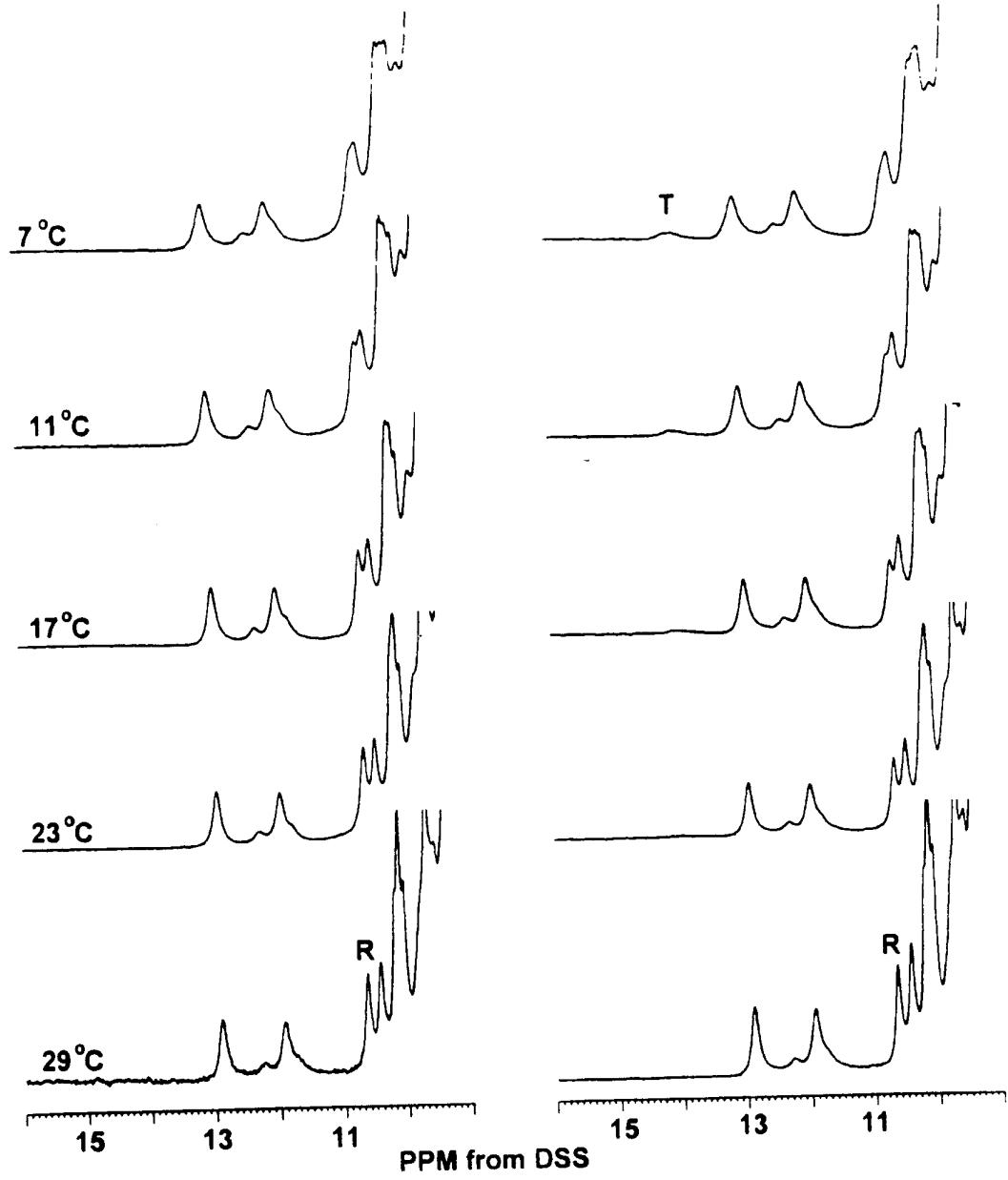


FIG. 8A

FIG. 8B



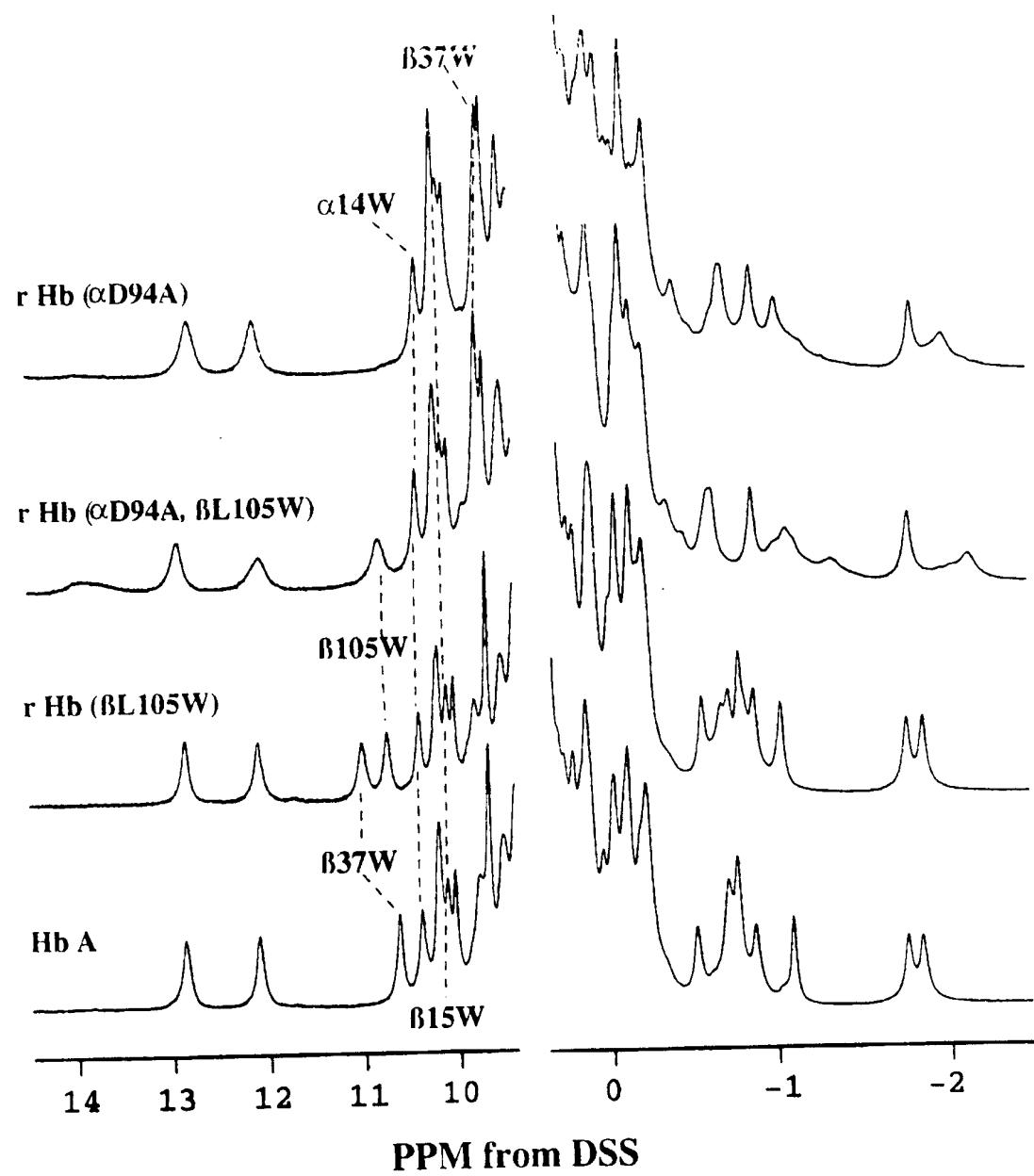


FIG. 10A

FIG. 10B

FIG. 11A

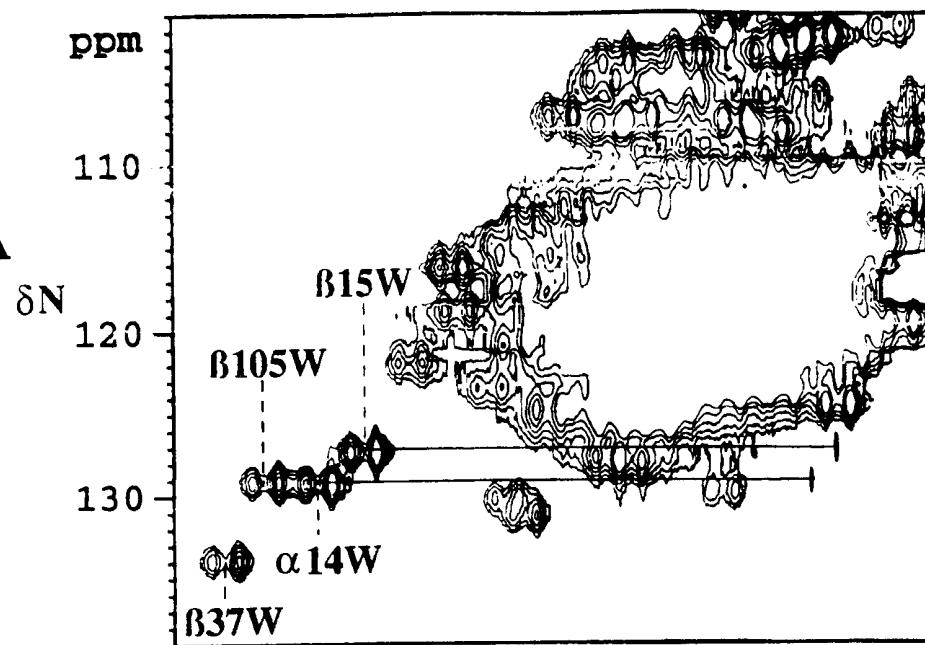
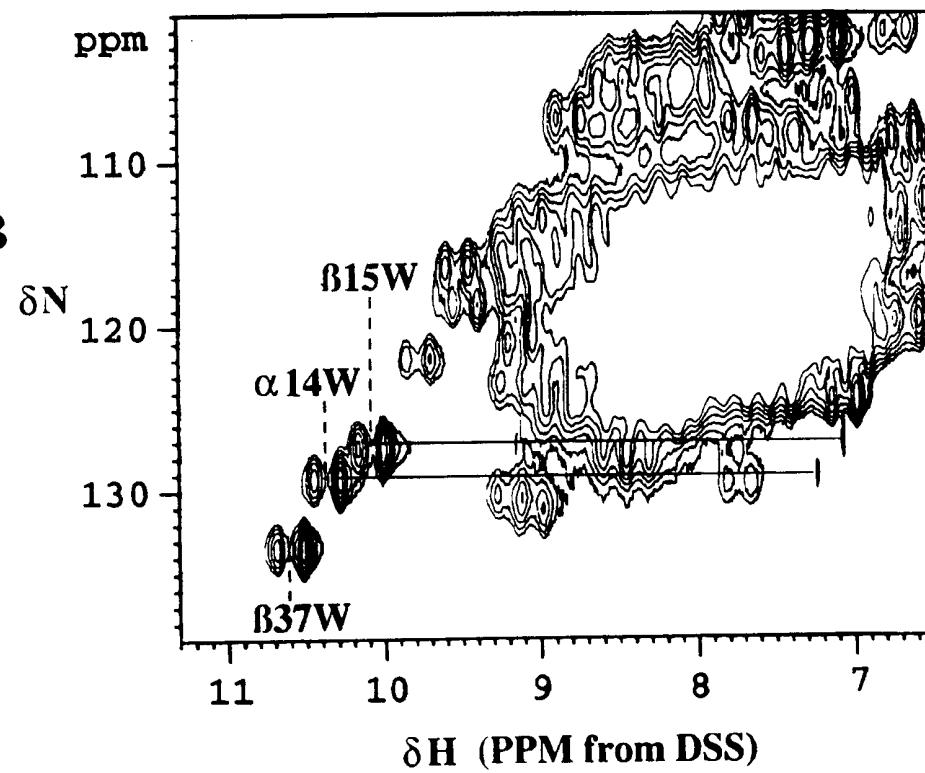
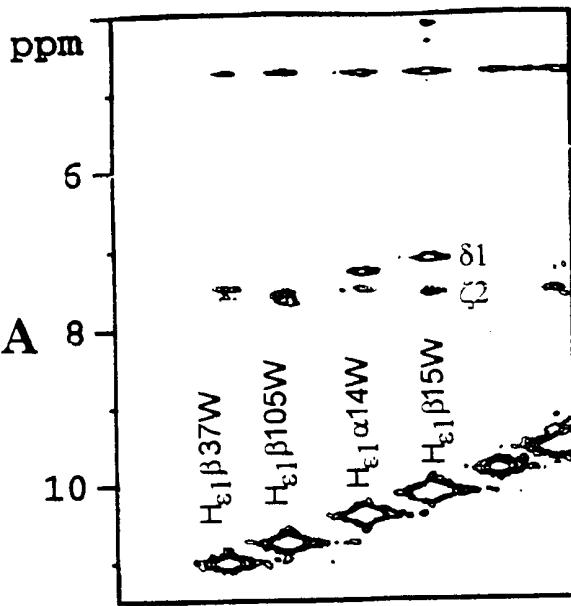
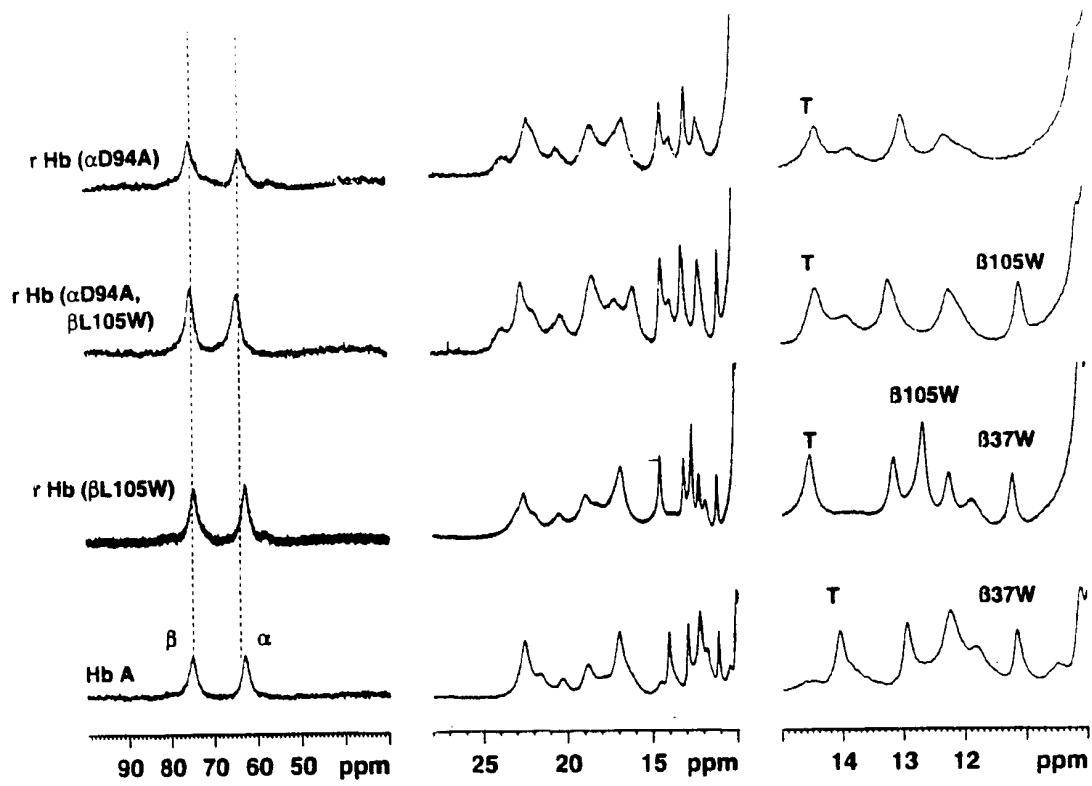


FIG. 11B







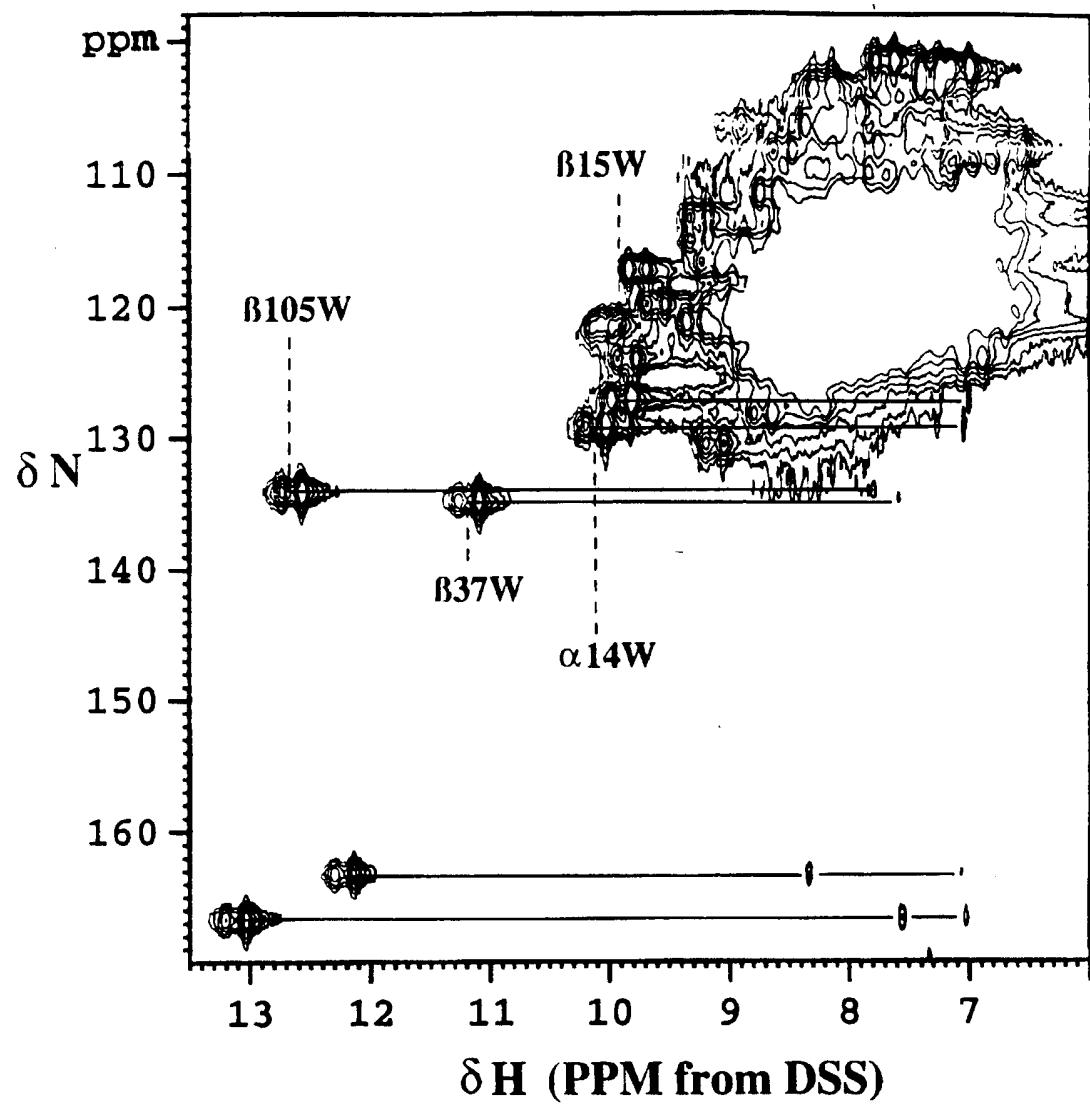


FIG. 14

FIG. 15A

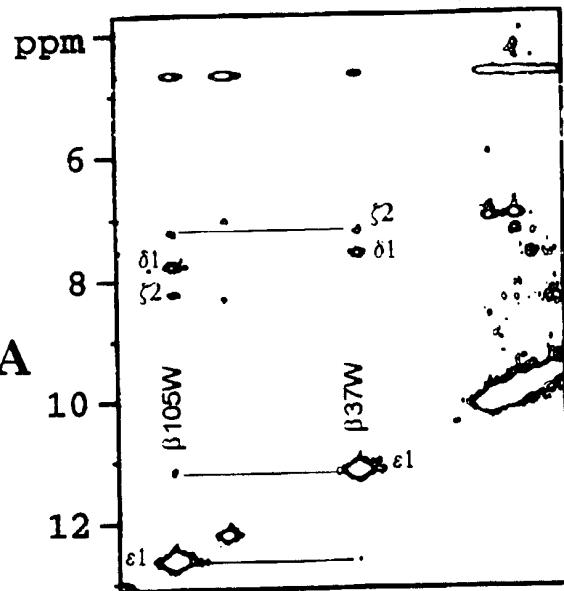


FIG. 15B

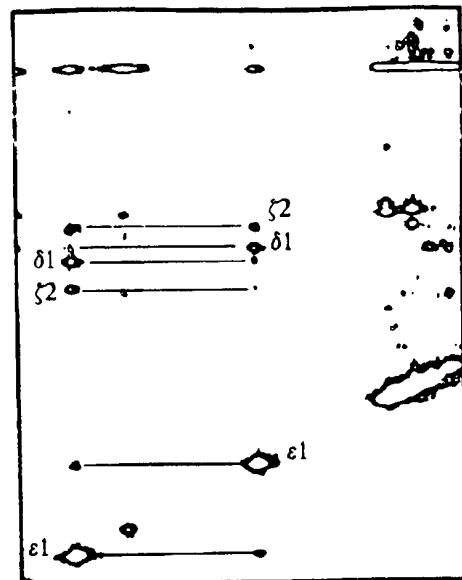


FIG. 15C

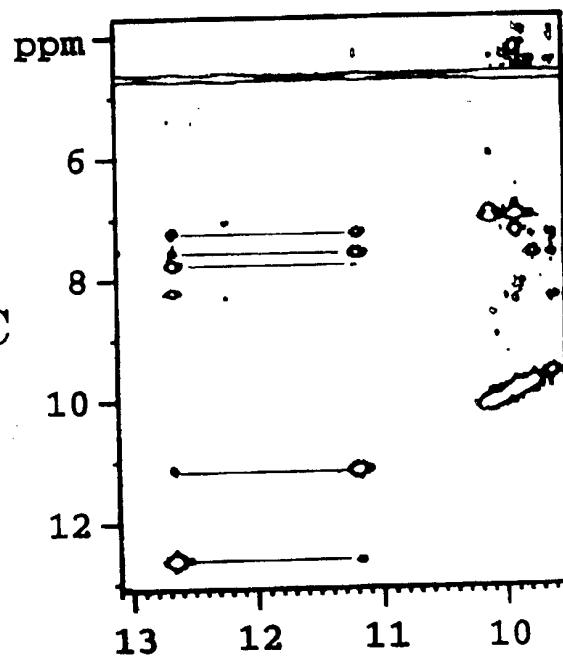
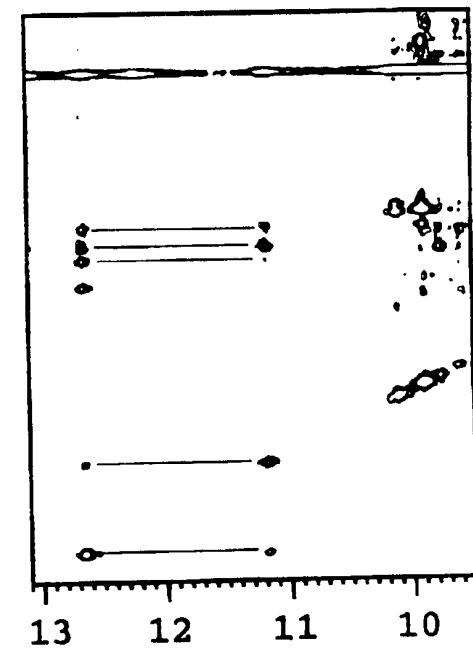


FIG. 15D



PPM from DSS

FIG. 16 A

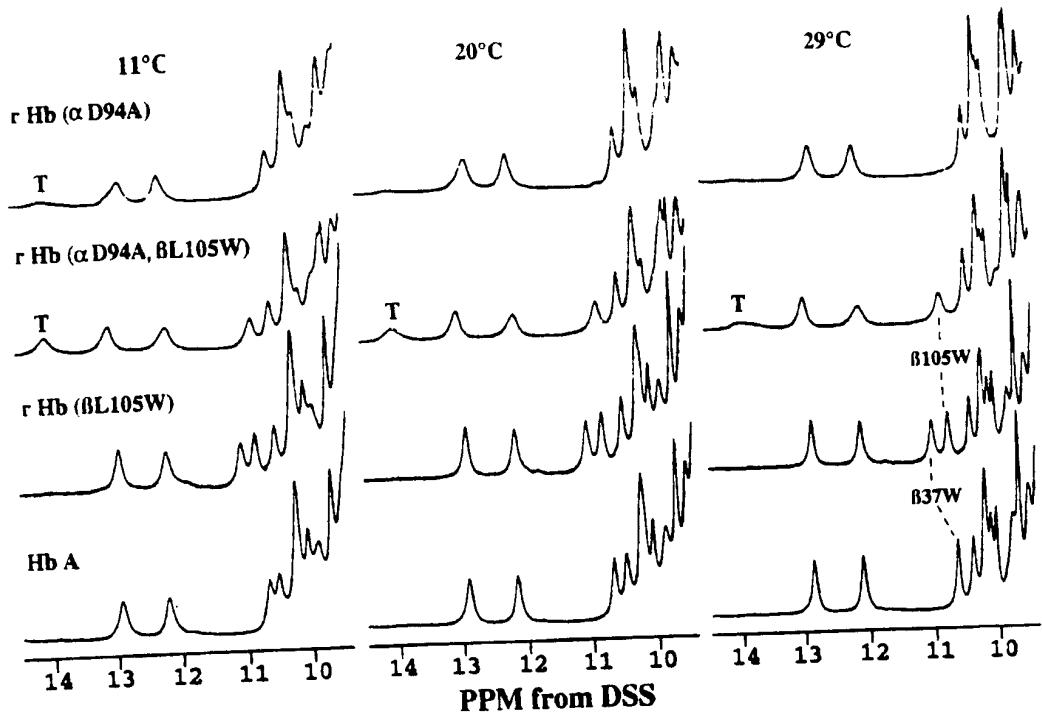


FIG. 16B

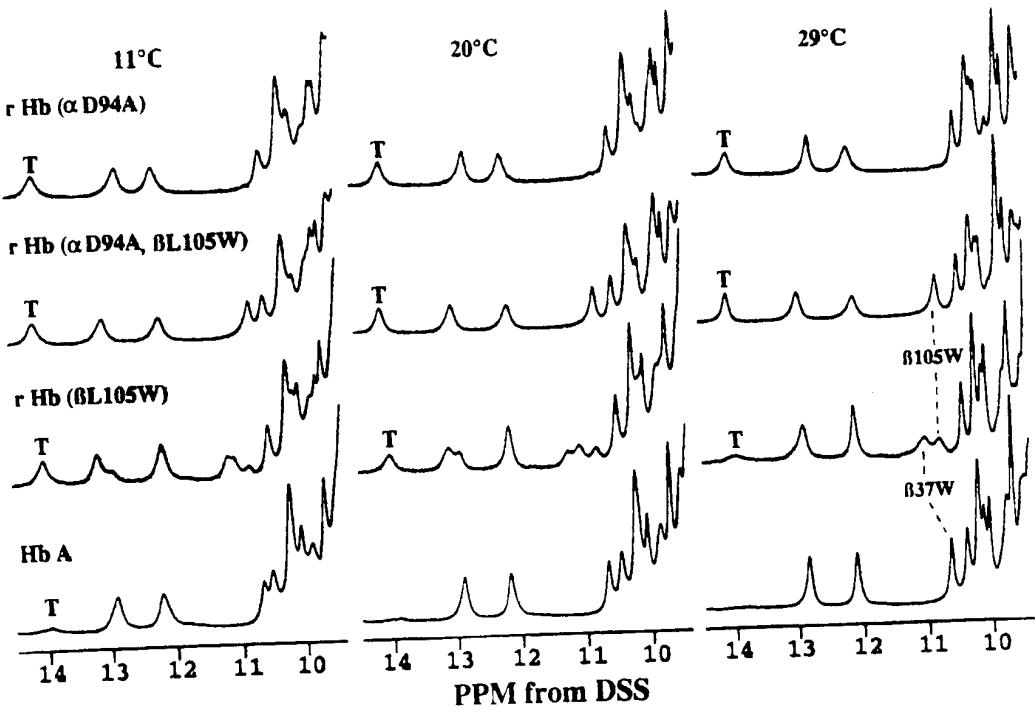


FIG. 17A

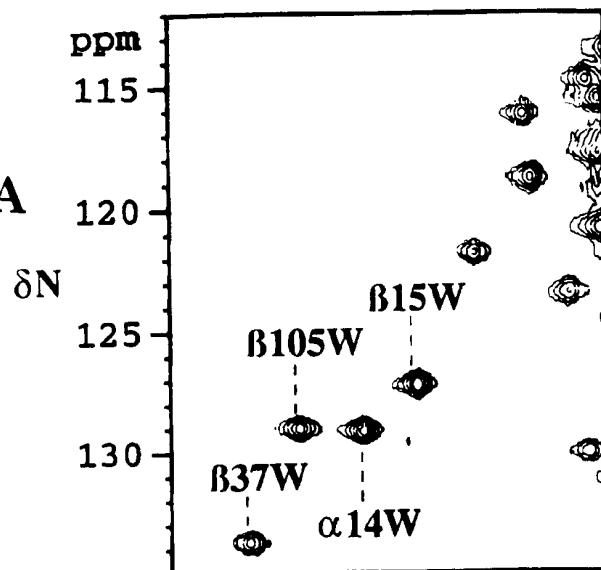


FIG. 17B

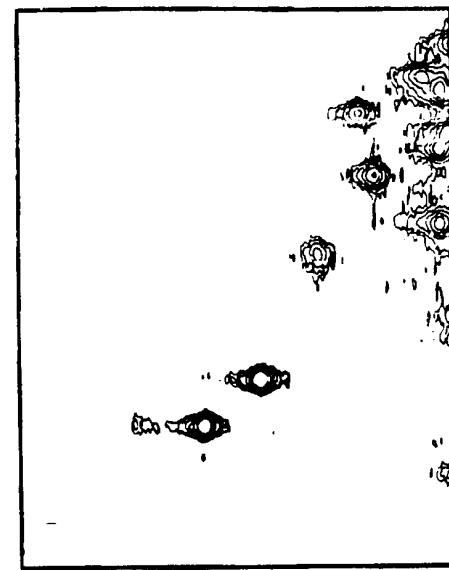


FIG. 17C

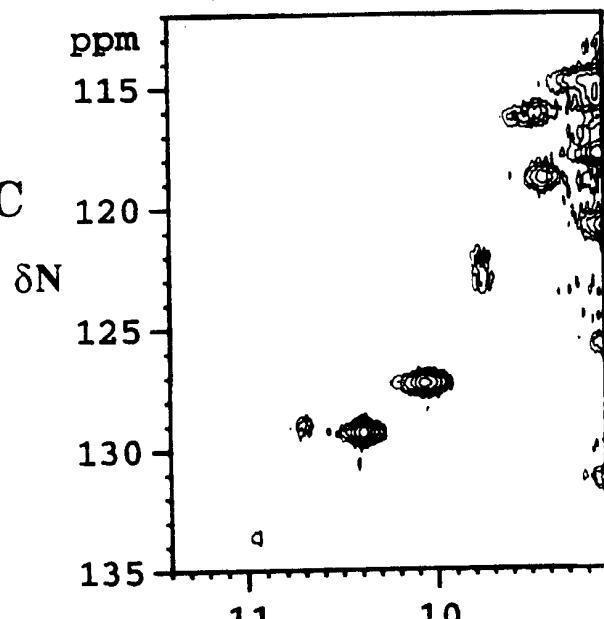


FIG 17D

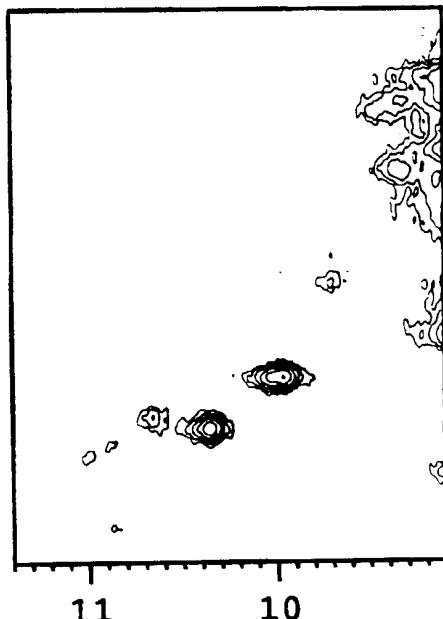


FIG. 18A

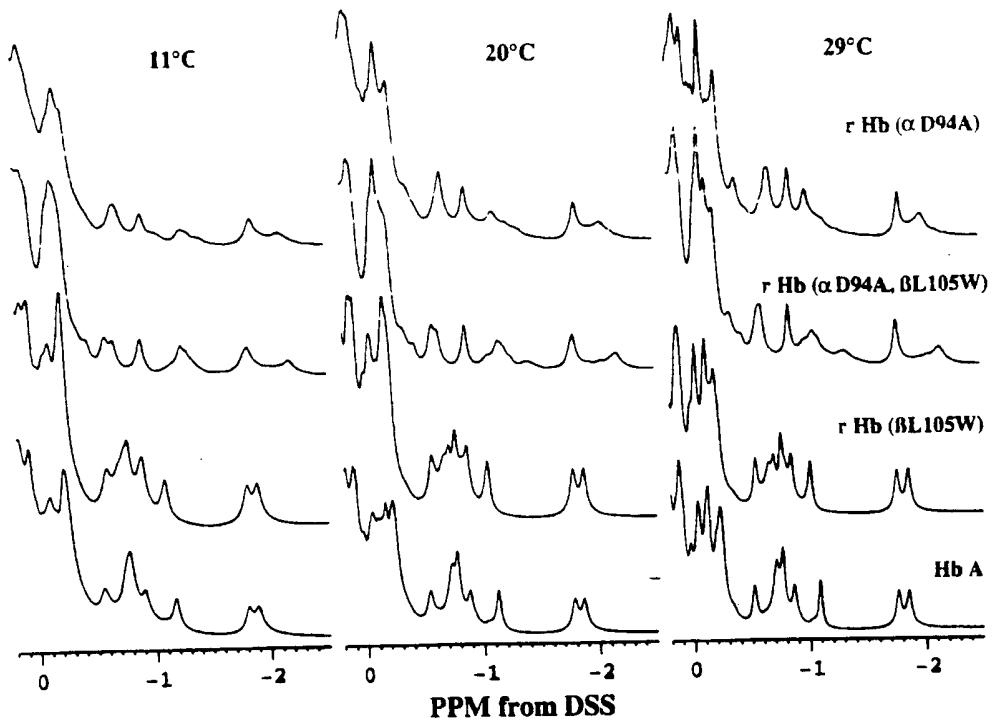


FIG. 18B

